Knowledge Matters: The Long-Run Determinants of State Income Growth

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Abstract

Real average U.S. per capita personal income growth over the last 65 years exceeded 400 percent. However, while the stark income differences across states narrowed considerably between 1939 and 1976, since 1976, the standard deviation of per capita incomes at the state level has actually risen, as some higher-income states have seen their income levels rise relative to the median of the states. This paper seeks to understand the sources of these relative growth performances. A key contribution of this paper is that we estimate the magnitude of various growth factors by using an augmented growth model and a panel of the 48 contiguous states from 1939 to 2004. Specifically, we control for factors that previous researchers have argued were important: tax burdens, public infrastructure, size of private financial markets, rates of business failure, industry structure, climate, and knowledge stocks.

Given the absence of barriers to the flow of information, labor, and capital across state boundaries, neoclassical growth theory suggests that the per capita personal income of residents of the U.S. states should converge over time. So what is working against convergence? Our results are easily summarized: A state's knowledge stocks (as measured by its stock of patents and its high school and college attainment rates) are the main factors explaining a state's relative per capita personal income.

We find that these effects are robust to a wide variety of perturbations to the model. Other things equal, being one standard deviation above the states' average in the stock of patents per capita (75 percent higher) leads to 3.0 percent higher per capita personal income. Similarly, being one standard deviation above the states' average in high school attainment (a 20 percentage point increase) leads to 1.5 percent higher per capita personal income. Finally, being one standard deviation above the states' average in college attainment (23 percentage points higher) leads to 1.4 percent higher per capita personal income.

In short, we find that incomes have failed to converge because knowledge stocks have failed to converge. If state policymakers want to improve their state's economic performance, then they should concentrate on effective ways of boosting their stock of

knowledge. Of course, further research will be needed to determine the most efficient way of accomplishing this.

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